WHAT IS CLAIMED IS:

1. An apparatus for curing tires, comprising:

a chamber configured for containing at least one tire assembly for curing;

a heat exchanger disposed in said chamber;

a heating unit for heating water, said heating unit being in fluid communication with said heat exchanger in a closed circuit, said heating unit having a heating unit outlet for the discharge of heated water from said heating unit;

a pump for circulating a flow of water between said heating unit and said heat exchanger,

said pump having a pump inlet for the flow of water into said pump;

an expansion tank in fluid communication with said heating unit outlet and said pump inlet such that water may circulate within said closed circuit from said heating unit, into said expansion tank, and back to said pump;

a valve connected in said closed circuit between said heating unit outlet and said expansion tank so as to control the flow of water fed to said expansion tank from said heating unit;

a pressure sensor for measuring the pressure of the water in said closed circuit; and,

a control system in communication with said pressure sensor and said valve, said control system configured for opening said valve when the pressure of water in said closed circuit falls below a desired set-point pressure and configured for closing said valve when the pressure of water in said closed circuit rises above the desired set-point pressure.

2. An apparatus for curing tires as set forth in claim 1, further comprising a temperature sensor positioned for measuring water temperature in said closed circuit at a predetermined position that is upstream of said pump and downstream from said heat exchanger.

3. An apparatus for curing tires as set forth in claim 2, wherein said control system is in communication with said temperature sensor and said heating unit and is configured for operating said heating unit based on output from said temperature sensor.

4. An apparatus for curing tires as set forth in claim 3, wherein said heat exchanger is a

multi-pass fin and tube assembly.

5. An apparatus for curing tires as set forth in claim 4, wherein said pressure sensor is positioned at a point about 10 to 45 seconds upstream of said heating unit.

6. An apparatus for curing tires as set forth in claim 1, wherein said heat exchanger is a steam plate assembly.

7. An apparatus for curing tires as set forth in claim 1, wherein said chamber is a tire curing press and said heat exchanger further comprises a bladder disposable in an interior of a tire cavity and a circuit for guiding the flow of water through portions of said curing press surrounding an exterior of the tire.

8. An apparatus for curing tires as set forth in claim 1, wherein the water in said closed circuit is heated to a temperature of about 120° C to 190° C.

9. An apparatus for curing tires as set forth in claim 1, further comprising means for circulating air in said chamber at a rate of about 1500 to 1800 feet per minute.

10. An apparatus for curing tires as set forth in claim 1, wherein said pump is rated to circulate heated water at a rate of about 15 to 40 gallons per minute.

11. An apparatus for curing tires, comprising:

a chamber configured for containing at least one tire assembly for curing;

a heat exchanger in thermal communication with said chamber;

a heating unit for heating water, said heating unit being in fluid communication with said heat exchanger;

a pump for circulating a flow of water between said heating unit and said heat exchanger;

an expansion tank in fluid communication with said heating unit and said pump such that water may circulate from said heating unit to said expansion tank and said heat exchanger, and back to said pump;

a pressure sensor in fluid communication with the water; and

a valve connected fluidly between said heating unit and said expansion tank, said valve configured for selectively diverting at least part of the flow between said heating unit and said heat exchanger to said expansion tank based on pressure readings determined by said pressure sensor.

12. An apparatus for curing tires as in claim 11, further comprising a control system in communication with said pressure sensor and said valve, said control system configured for opening said valve for a predetermined period of time when the pressure of water is below a desired set-point pressure and configured for closing said valve when the pressure of water rises above the desired set-point pressure.

13. An apparatus for curing tires as set forth in claim 12, further comprising a temperature sensor positioned for measuring water temperature at a predetermined position that is upstream of said heating unit and downstream from said heat exchanger.

14. An apparatus for curing tires as set forth in claim 13, wherein said control system is in communication with said temperature sensor and said heating unit and is configured for operating said heating unit based on temperature measurements of said temperature sensor.

15. An apparatus for curing tires as set forth in claim 14, wherein said heat exchanger is a multi-pass fin and tube assembly.

16. An apparatus for curing tires as set forth in claim 15, wherein said pressure sensor is positioned at a location that is about 10 to 45 seconds upstream of said heating unit.

17. An apparatus for curing tires as set forth in claim 14, wherein said heat exchanger is a steam plate assembly.

18. An apparatus for curing tires as set forth in claim 14, wherein said chamber is a tire curing press and said heat exchanger further comprises a bladder disposable in an interior of a tire cavity and a circuit for guiding the flow of water through portions of said curing press surrounding an exterior of the tire.

19. An apparatus for curing tires as set forth in claim 13, wherein the water is heated to a temperature of about 120° C to 190° C.

20. An apparatus for curing tires as set forth in claim 13, further comprising a fan for circulating air in said chamber at a rate of about 1500 to 1800 feet per minute.

21. An apparatus for curing tires as set forth in claim 13, wherein said pump is rated to circulate heated water at a rate of about 15 to 40 gallons per minute.

22. A method for curing tire assemblies, comprising the steps of:

placing a plurality of tire assemblies in a chamber;

heating water to a desired set-point temperature using a heating unit;

circulating the heated water in a closed circuit through a heat exchanger in the chamber;

circulating air in the chamber to flow by the heat exchanger;

measuring the pressure of the heated water;

comparing the measured pressure to a desired set-point pressure;

opening a control valve to divert the water to an expansion tank if the measured pressure is below the desired set-point pressure; and

closing the control valve to prevent water from flowing to the expansion tank if the measured pressure is above the desired set-point pressure.

23. A method for curing tire assemblies as set forth in claim 22, further comprising the steps of:

measuring the temperature of the heated water at a predetermined position that is after the water passes through the heat exchanger and before the water passes through the heating unit;

comparing the measured temperature to a desired set-point temperature; and

modifying the operation of the heating unit depending upon the results of said comparing step.

24. A method for curing tire assemblies as set forth in claim 23, wherein the water is heated to a temperature of about 120° C to 190° C.

25. A method for curing tire assemblies as set forth in claim 24, wherein air is circulated at a rate of at least 1000 feet per minute.

26. A method for curing tire assemblies as set forth in claim 25, wherein air is circulated at a rate of about 1500 to 1800 feet per minute.

27. A method for curing tire assemblies as set forth in claim 26, wherein the heated water is circulated at a rate of about 15 to 40 gallons per minute.

28. A method for curing tire assemblies as set forth in claim 22, where said step of measuring the pressure is taken at a point that is about 10 to 45 seconds upstream of said heating unit.

29. A method for curing tire assemblies, comprising the steps of:

placing a plurality of tire assemblies in a chamber;

heating water to a desired set-point temperature using a heating unit;

circulating the heated water in a closed circuit through a heat exchanger in the chamber;

circulating air in the chamber to flow by the heat exchanger;

measuring the pressure of the heated water;

comparing the measured pressure to a desired set-point pressure range;

opening a control valve to divert the water to an expansion tank if the measured pressure is below the desired set-point pressure range; and

closing the control valve to prevent water from flowing to the expansion tank if the measured pressure is above the desired set-point pressure range.

30. A method for curing tire assemblies as set forth in claim 29, further comprising the steps of:

measuring the temperature of the heated water at a predetermined position that is after the water passes through the heat exchanger and before the water passes through the heating unit;

comparing the measured temperature to a desired set-point temperature; and

modifying the operation of the heating unit depending upon the results of said comparing step.